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ABSTRACT

Arguing that educational testing has not grown with the theory and knowledge base of the reading field, this paper cites the current configuration of testing as a major contributor to the instructional stagnation, methodological back-to-basics movement, and general lack of excitement and true innovation found in classrooms and schools today. The first section of the paper discusses what is actually tested by both norm referenced and criterion referenced tests. It also analyzes the weaknesses of minimum competency tests and details the impact that each of these weaknesses has on education. The second section of the paper examines factors that should be included in new assessment forms in terms of the research supporting them. These factors are grouped into two categories: (1) things it might be helpful to know about the learner when planning instruction, and (2) strategies that might be employed or taught to the reader in order to enhance comprehension. The third section of the paper offers a blueprint for changes in educational testing, with the school systems, test publishers, researchers at universities, legislatures, professional associations, media, parents, and producers of instructional materials sharing the responsibility for bringing about this change. (FL)

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LIMITATIONS OF THE TESTS IN THE LIGHT OF RECENT RESEARCH
IN READING AND LEARNING:

Problems, Possibilities, and a Program for Change

Jack N. Cole

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Testing is the main way that we attempt to assess reading, learning, performance, or potential in most educational settings. American education employs a great variety of normed and criterion-referenced paper-and-pencil tests to give the public, administrators, teachers, parents, and students a look at the effectiveness of instruction, the relative amount learned (or already known), or the likelihood of success in certain settings and programs. As the practice of paper-and-pencil testing has grown and expanded, it has had effects on public opinion, curriculum decisions, the design of instructional materials, instructional practices, research, and learning. Moreover, as the practice of testing has grown in scale, the attention paid to its underlying assumptions, aims, and successes has decreased almost proportionally. Today, instead of having instruction-driven testing programs, many school systems are experiencing testing-driven instruction. Somewhere along the way, we have lost control of one of our most valuable tools in the process of education. As a result of this, educational testing has not grown with the theory and knowledge base of our field. It has continued to assess factors and domains whose utility and even existence have been questioned by modern research and theory--and whose validity has been contradicted in many ways by modern innovations in instructional practice. Because of this creeping obsolescence, the configuration of testing as it stands today, both norm-referenced and criterion-referenced, is a major contributor to the instructional stagnation, the methodological "back to basics" movement, and the general

lack of excitement and true innovation to be found in classrooms and schools today. This is a vicious circle--a downward spiral--that must be broken. A healthy vitality must be injected into the way we conduct assessment, so that our testing programs both reflect instruction and lead it by establishing the "benchmarks of possibility" that many of us seek. Testing programs should provide a challenge, not an anchor. American education has been resting at anchor for far too long, now; it is time to hoist anchor and fire up our engines. We're getting rusty.

This discussion of testing has three purposes:

- To illustrate what things are tested by present-day reading tests, both normed and criterion referenced;
- To suggest what things could be tested, as validated by recent research in reading and learning; and
- To spell out a blueprint for change, where responsibilities are shared by school systems, test publishers, universities, legislatures, professional associations, the media and parents, and producers of instructional materials.

It is hoped that the contents of this paper will stimulate discussion and action within and among those groups responsible for meeting the goals suggested in the final section. Each group involved in this set of issues needs to do three things: first, listen carefully to each of the other groups; second, realize that it has responsibility for acting--that it has expert status, which gives it the duty of making demands on the others; and third, take effective, carefully thought-out action. Informed, deliberate, and speedy action by all concerned will do much to counter the stagnant

drift of today's educational climate and to ensure that critical decisions remain in the hands of the proper decision makers.

I. What Is Assessed by Present Tests

A. Group-Normed Standardized Tests of Reading

There is much congruence in what is tested by today's group-normed standardized tests of reading. An analysis of eight such tests currently in widespread use (see the Appendix) showed that they all assess a "decoding" and a "comprehension" factor. Two of them also provide for the measurement of a rate factor. It is interesting to note that all of these tests seem to be based on the same model of the reading process--factor analysis done before the explosion in psycholinguistic knowledge of the late 1960's and 1970's (e.g., Davis, 1968; Spearitt, 1972) and based entirely on the outcome performances of readers on tests!

The analysis of current standardized tests further showed that "decoding" was generally subdivided into "phonics," "structural analysis," and "vocabulary." Test domains labelled "comprehension" were usually composed of subtests such as "literal," "inferential," "main idea," "figurative language," "analogies," and so on. It is interesting to note that publishers do not generally claim uniqueness as a prime quality of these tests, preferring to focus on "convenient features" as selling points. [Test developers, publishers, and sales representatives tend to note, by the way, that innovation is generally avoided because it is not profitable. This fact of life points to a real set of responsibilities on the part of those who influence and represent test consumers.] The chart following summarizes an analysis of the subtest designations of major norm-referenced tests currently in use.

Subtest Types Found in Analysis of Eight Major Tests

<u>Phonics/Decoding</u>	<u>Word Knowledge/ Vocabulary</u>	<u>Comprehension</u>	<u>Functional/"Study"</u>
Word part clues	Meaning difference	Story comprehension	Rate
Ending letters	Meaning in isolation	Passages	Skimming and scanning
Initial letters	Sight vocabulary	Literal comprehension	Maps
Consonants	Meaning in context	Inference	Charts
Auditory discrimination	Synonyms	Sentence comprehension	"Study skills"
Visual discrimination	Antonyms	Literal picture comprehension	
Letter recognition	Classification of words	Inferential picture comprehension	
Decoding	Listening vocabulary	Mood	
Vowels		Style	
Beginning sounds		Main idea	
Syllabication		Organization	
Compound words		Application	
Phonics analysis		Purpose of author	
Blending		Viewpoint	
Recognition of letter forms		Figurative language	
Recognition of letter sounds			
Recognition of letter names			

A more quantitative analysis of these subtest designations (not subtest types) revealed that, for the 26 forms of the 8 tests analyzed,

- 28% were phonics/decoding
- 21% were word knowledge/vocabulary
- 30% were comprehension (3% literal; 27% above-literal)
- 9% were functional/"study skills"
- 8% were listening.

The breakdowns charted above show a number of things about the tests they comprise. They share a number of characteristics:

1. They are old designations for components of the reading process that have been with us for years in reading and language arts. A perusal of methods texts from the 1950's and 1960's will reveal that these terms appear in nearly all indices of contents (e.g., Heilman, 1961; Tinker, 1952). In fact, there is no term on the list that is not used in exactly the same form or discussed in substance in E. G. Huey's The Psychology and Pedagogy of Reading (Huey, 1908). Age itself is not a sufficient condition for criticizing these tests. However, all of the things tested predate by many years and decades factors and components of the reading process that have been established by recent research.
2. The subtest designations bear a striking resemblance to the tables of contents of commercial materials available for developmental and remedial instruction in reading, which in turn bear a strong resemblance to the indices of methods tests.

3. Within each major breakdown, subtest names are very similar in term of the task they require, or overlap with other subtests. This is significant in that the largest differences occur between the major areas. Since the bulk of subtests tend to overlap, there really seem to be only four areas tested: phonics/decoding, word knowledge/vocabulary, comprehension, and functional/"study."
4. In general, and for any one test, the subtest breakdowns tend to stick pretty close to the categories suggested by the Davis (1968) and Spearitt (1972) factor analyses of the reading process, which themselves were conducted using test scores as input variables. This creates a tautology--a condition where input completely determines output in a circular fashion. Tests and subtests considered valid because they were identified as factors by one of these analyses must be reconsidered in light of the fact that test scores were what were analyzed. In fact, as late as 1980, researchers were still attempting to set ground rules and to validate statistical procedures for determining skills hierarchies (Bourque and Dayton, 1980). It is by no means certain that the subskills assessed by the tests analyzed are the soundest for use in guiding either theory or instruction.
5. The subtest names tend to refer to pedagogical labels for teaching/learning activities, rather than to psychologically valid and scientifically validated components of the reading/learning process. As will be seen later, recent research has

given us insights into concepts and teaching methodologies that are potentially far more fruitful in helping students learn to read.

B. Minimum Competency Functional Reading-Type Tests

During the 1970's, minimum competency testing became a requirement in many states. As of 1979, 37 states required minimum competency testing in reading (Lewis, 1979). Where they did not resemble the traditional group tests, these minimum competency tests tended to assess an area variously called "functional," "survival," "job-related," or "real-life" reading. An example of this type of test is the Maryland Functional Reading Test (Maryland State Department of Education, 1972), which assesses skills in the areas of locating references, gaining information, following directions, and understanding forms.

The Maryland Functional Reading Test (MFRT), given as a graduation requirement beginning in grade 9, requires students to answer multiple-choice questions based on such real-life stimuli as:

pedestrian road signs	almanacs
school forms	calendars
emergency signs	package labels
telephone directories	consumer information
newspapers	maps
dictionaries	catalogs
sales slips	application forms

and so on.

Tests of this type have also become available commercially (e.g., Riverside Press' Life Skills test) and through the research done by

universities (Ganopole, 1980). These tests contain items of the same kind as do the various state-prepared competency tests. Questions are asked regarding the information on product labels, in telephone books, advertisements, owners' manuals, legal notices, job requirements, bills, and so on. The domains tested by these instruments have, for the most part, been validated either by committees of citizens (as was the MFRT) or by studies of the requirements of the work environment (such as Sticht, et al, 1972). What is measured by them is more a political consensus of what should be assessed than it is anything else. There is justified widespread concern about the validity and applications of these tests (Haney and Madaus, 1978), even though they apparently are here to stay.

Minimum competency tests are subject to criticisms very similar to those leveled at the traditional tests of reading:

1. Subtest designations and domains are those that have been the subject of discussion for many years. Recent research in reading and learning appears not to have affected their development.
2. Subtest designations both reflect and influence the development of commercial instructional materials and are beginning to be treated at greater length in methods texts (e.g., Singer and Donlan, 1980, chapter 8).
3. Apart from the differences between the stimulus materials used in the tests, there seems to be little difference in the reading tasks required by the different subtests--literal and above-literal responses in multiple-choice format.

4. Subtest breakdowns tend to follow available stimulus material, rather than cognitive task, breakdowns. While this produces high face validity, it is difficult to see how it maps onto instruction, except as it relates to the surface appearance of school tasks.
5. As with group-normed tests, minimum competency functional tests seem not to be derived from a viable theoretical base. They seem to be constructed from bits and pieces without reference to research that could help to make the information they yield truly useful for effective instruction.

C. Effects of Current Tests

It has been argued that both group-normed standardized tests of reading achievement and minimum competency functional reading-type tests share five weaknesses:

1. They reflect assumptions and knowledge states that existed prior to what exists today;
2. Their form and content is closely intertwined and interactive with both commercially published and instructional materials;
3. Each type of test seems not to assess as many different factors as its subtest designations seem to suggest;
4. Subtest breakdowns of both types of test follow divisions suggested by research and realia which are related to current theoretical and instructional knowledge only in a historical sense, and which may produce non-optimal happenings in classrooms; and

5. Neither type of test seems to have been constructed from a currently viable theoretical base.

Each of these weaknesses has a major impact on education. Each makes it much more difficult for educators at all levels to modernize, streamline, and improve the effectiveness of instruction in the light of the presently available wealth of new information concerning instruction. Some of the more injurious results of these weaknesses seem to be:

1. Educators, as well as the general public, seem to be locked into a view of the proper outcomes of instruction that has been outmoded for some time. (Tragically, this includes superintendents, boards of education, supervisory personnel, and principals.)
2. This static view is reinforced strongly (in the Skinnerian sense) every time testing occurs.
3. Curricula and instructional materials are strongly influenced, if not determined, by what these tests purport to assess.
4. The stasis pertaining to expectations of instruction also affect what instructional materials are published and marketed, particularly in an economic climate where innovation is both enormously costly and currently unprofitable.
5. Current, test-driven expectations of instruction cause teachers to feel pressure for "teaching to the test" which, when successful, may cause scores to rise yet produce no other documentable improvement of instruction or learning.

6. Since this form of testing is so pervasive, profitable, "efficient," and time-honored, alternative modes of assessment and evaluation have found their own development to be stunted, ignored, opposed, or just plain unprofitable and thus economically non-viable.
7. Teachers are mislead into believing that, if they teach students those skills identified as "weak," then student performance in the total reading process will improve.
8. Education and society have their attention focused on a set of tasks/skills that, while arguably important, nonetheless divert attention from theoretically sound instructional tasks which promise much greater improvement in overall reading performance--as well as from those ends and goals of the reading process which are of supreme importance to our own society and to our global culture but which are not tested.
9. The "factory concept" of schooling--of education as efficient rather than effective--is highlighted by the media and fed back into the thinking of educators and public alike.
10. A theoretically obsolete and unsound view of reading, learning, and instruction is fostered. This makes agents of sound innovation have to compete against the inertia of established truth. It also causes the educational decision makers to cast their solutions to short-term problems in forms that inevitably serve to make them worse, since they caused the problems in the first place.

11. Perhaps the most immediate consequence of the tests being built on an outmoded theoretical base is that teachers are alienated from the body of knowledge that should constitute the roots of their professional life; this increases the uncertainty and stress which they must bear in order to function effectively, or at all.
12. By establishing benchmarks, rather than ceilings or targets, the tests lower teacher expectations for student performance--and by appearing to describe performance that is stable over time (viz., reliability), they prejudice teachers against the students who do not perform well on them.
13. Since the tests all establish a "norm" or "most average performance" of some kind, it is very easy for schools to view the "norm" as a target to be hit, rather than as a hurdle to be cleared by as big a distance as possible. Moreover, since the canons for acceptability are based on a dated foundation, educators may find that they are aiming at a variety of mediocrity that has been stale and old-fashioned for as long as 10 years or more.

Any one of these 13 effects might justify a reassessment of our current testing configuration. So might any one of the five weaknesses in the tests that have been cited above. However, it must be said that group assessment is not, of itself, an evil. In fact, the positive changes and improvements in curriculum, instruction, and educational materials which we have seen in recent years may be credited in some part to the facilitative effect of public scrutiny of education. By reacting to the information

provided by the tests, citizens were able to cause schools to make changes which, in many cases, improved instruction and schooling. But research and experience have provided knowledge and insights which we did not have before, and the tests have not kept up with the times.

It is time that test makers, educators, legislators, and the general public agree upon the urgent need for updating the means by which we assess reading. It is the responsibility of each one of us to take an active part in that process. This section has looked at some of the reasons why such action is necessary. The next section will consider some of the ideas and tools made available by recent research in reading/learning and their potential use as factors to be assessed in wide-scale testing of reading/learning. It will be speculative in its nature and provocative in its purpose.

II. What Could Be Assessed by Future Versions of Present Tests

A. Support for New Types or Evolutions in Testing

Future versions of present group tests could assess factors that would help schools provide more effective instruction. This instruction could be designed to maximize the human potential of student and teacher alike. Writing in the Educational Researcher, Fletcher notes that

. . . the climate of opinion that presently dominates education is oriented toward minimums--minimum skills, basic skills, minimum competencies--to the virtual exclusion of anything else.

This should not be allowed. We need a vision of what education could be that goes far beyond the basics; a vision that is also solidly grounded in research and in substantive context to avoid the problems so endemic with "experimental" educational programs. (Fletcher, 1978, p. 13.)

Fletcher's challenge to education represents a growing concern that our schools could be doing more than they are to develop students' human potential. Until recently, educators had a difficult time in assembling a body of research-verified theory on which to base decision making, as well as assessment, in the schooling process. However, at the end of the 1970's, Walberg, Schiller, and Haertel could write that

The past decade of educational research has shown us the means to attain our educational goals more fully than ever before [We] were told only a dozen years ago, by reputable observers, that results of most research on the teaching-learning process were not significant. In fact, John Stephens [(1967)], after reviewing several decades of research, said that most educational techniques seem to hinder as much as they aid learning. There was good reason for this conclusion a decade ago

The impressive accumulation of educational research findings in the last decade seems to have gone unnoticed by many educators and by the general public. It might indeed be concluded from widely publicized reports that the schools are pathological institutions and that neither educators nor research workers know how to cure their problems and increase their productivity But most of these accounts failed to consider the hundreds of other learning studies, the results of which are tabulated below, along with many studies on other relations between educational means or conditions and learning outcomes. (1979, p. 179.)

Walberg, Schiller, and Haertel proceed in their article to tabulate the results of 2,725 studies with significant findings on topics ranging from time on task to the effect of home environment on reading gains.

Reviews of effective research have become increasingly common since this article was published, indicating the growth of a large body of knowledge which can be used to point the way to more effective instruction and, by extension, to better assessment, evaluation, and planning.

Research in reading has grown at a similar rate, as evidenced by the increasing size of the annual "Summary of Investigations Relating to Reading" in the Reading Research Quarterly. This research provides a basis for the factors to be recommended as potentially fruitful additions to today's group assessment measures--or as replacements for outmoded or less useful parts of them.

The availability of frameworks of factors lending themselves to assessment strategies is documented by Tyler and White (1979). Reporting the results of deliberations held at the NIE-sponsored Conference on Research and Testing, they discuss the need to expand the horizons of current achievement testing that has been generated by recent research and by the increasing availability of information-handling technologies. Their major criticisms of current tests are that:

1. Testing does not reflect the range of student cultural backgrounds, causing systematic bias in educational decision-making;
2. Testing has only limited value in accountability programs;
3. Testing limits the range of classroom teaching in a harmful way; and
4. Testing does not allow enough scope for fair evaluation of new approaches to teaching (Tyler and White, 1979, pp. 6 - 9).

Tyler and White present a list of "intellectual tools that physical scientists and technologists often use in their professional work" and label this list "Some New Things To Test For." They call for a new look at the basic issues in testing (1979, p. 20).

Shoemaker echoes the comments of Tyler and White in an article calling for improvement of achievement testing. He notes that, considering

. . . the length of time and the concomitant millions of dollars expended, it is quite disturbing and frustrating to find that achievement testing has not improved substantially over the past 60 years. (1980, p. 37.)

He concurs with Thorndike's conclusion, based on a review of developments in testing during the years 1950 to 1970, that

. . . in truth, testing is like an iceberg. The part that shows as change is the one-ninth of the berg that is above water level, and the part that remains much the same is the vast underwater bulk The range of content and objectives measured by current tests has not been greatly extended over what was included twenty years ago. (Thorndike, 1971, p. 13.)

Shoemaker (1980) calls for the development of a framework for skills domains assessed by tests. He proposes that this framework be developed based on the research, instructional practices, and educational goals used by schools. He sees this as a process involving large groups of people working in a framework of consensus and varying from school system to school system.

There are two salient parts to his proposal: first, that a research base form a large part of the evolved frameworks; and second, that the construction of appropriate frameworks be made a conscious process among educators and the public at all levels. It is significant to note that Shoemaker points out one of the major criticisms made earlier in this discussion: that current achievement tests are primarily grab-bags of skills and activities.

On this somber note, it seems safe to come to these conclusions before moving on:

1. There appears to be a good deal of high-level support for upgrading and modernizing achievement testing, both in general and in reading.
2. There seems to be an adequate base of research-validated knowledge, from which testable factors may be drawn and fitted into a recognizable theoretical unified framework useful for dealing with reading performance, both evaluatively and instructionally, and for planning purposes.
3. There seems to be a consensus that such modernization has not occurred.

This section of the paper will propose several factors/components for inclusion in a testing framework that is feasible, or nearly feasible, today--and useful for instruction, evaluation, and planning. The final section of this paper will consider how to move toward a realistic implementation of such a framework in a way consistent with the traditional values and procedures of American education.

B. Factors Proposed for Inclusion in Testing

A review of recent research and educational literature reveals a large number of factors that might be proposed for inclusion in group testing practices. These factors may be roughly grouped into two categories:

- Things it may be helpful to know about the learner when planning instruction, and
- Strategies that may be employed or taught to the reader in order to enhance comprehension.

Although it might prove difficult to fit these factors into a single comprehensive model of the reading process and instruction, there have been attempts to synthesize available research into just such a framework. Huey's Psychology and Pedagogy of Reading (1908), Smith's Understanding Reading (first edition, 1971), Gibson and Levin's The Psychology of Reading (1975), Spiro, Bruce, and Brewer's Theoretical Issues in Reading Comprehension (1980), and several other works have given educators a good look at the state of the art. Several of the topics treated in these works are among those proposed here. Moreover, the above-cited works may be considered to establish a general framework of reading. This may be called the psycholinguistic/cognitive framework, and it seems to be the dominant one at this point in the century. Taken together, the concepts that may acceptably be called psycholinguistic/cognitive seem to provide both an adequate framework validated by research and a set of subsuming principles into which the proposed factors may be fitted. Elaborating this framework into a consistent, coherent system, as Joyce and Weil did with teaching in their book Models of Teaching (1980), has yet to be done; however, it will serve our present purpose to use it here.

The list below shows the factors proposed for entry into group testing procedures.

Information About the Learner

Learning styles (Dunn, 1979; Kusler, 1979; Dunn and Dunn, 1978, 1979; Dunn, Dunn, and Price, 1979)

Learning/teaching style (Gregorc, 1979)

Cognitive style (Goldstein and Blackman, 1978; Keefe, 1979; Seracho and Dayton, 1980; Seracho and Spodek, 1981)

Personality type (Golanty-Koel, 1977)

Information About the Learner (Cont'd)

- Modality strength (Barbe, Swassing, and Milone, 1979)
- Prior knowledge configuration (Pearson, Hansen, and Gordon, 1979)
- Use of mental imagery (Gambrell, Koskinen, and Cole, 1981)
- Status of schema utilization (Thorndike and Yekovich, 1980; Anderson, Reynolds, Schallert, and Goetz, 1977; Pichert and Anderson, 1976)

What May Be Taught to the Learner

- Use of prose structure (Meyer, 1975, 1977)
- Use of story grammar (Thorndike, 1977)
- Metacognition about reading (Myers and Paris, 1978)
- Coping with instructional components (Hodges, 1979)
- Use of prior knowledge (Pearson, Hansen, and Gordon, 1979)
- Use of mental imagery (Anderson and Kulhavy, 1972; Pressley, 1977; Gambrell, Koskinen and Cole, 1981)
- Learning/study skills (Anderson, 1980; Paivio, 1971; Higbee, 1977)

Information About the Learner

Learning styles of students have been studied by Dunn and Dunn (1978, 1979), by Dunn, Dunn, and Price (1979), and others. It has been shown that students have individual ways of relating to their environments, to their peers, and to instructional tasks. Further, it has been demonstrated that student achievement improves when students and teachers arrange environments, groupings, and instruction so as to conform to students' learning styles (Dunn and Dunn, 1979; Kusler, 1979).

A similar set of concepts, Gregorc's learning/teaching styles, describes how students interact with information and concepts. Students

combine an abstractness-concreteness dimension with a random-sequential dimension to develop a preferred style. Gregorc (1979) states that optimal learning occurs when teachers conduct instruction in a way that matches or is complementary to students' styles.

Cognitive styles deal with a wide variety of cognitive preferences of students, ranging from psychological differentiation to impulsivity-reflectivity to locus of control (Keefe, 1979; Goldstein and Blackman, 1978). These preferences have strong implications for instruction. Seracho and Dayton (1980) have found that field-independent teachers seem to get better achievement from their students than do field-dependent teachers. Seracho and Spodek (1981) advocate that teachers vary instructional tasks and approaches so that both field-dependent and field-independent students learn to cope successfully with tasks requiring both types of behavior.

Personality type, as assessed by the Myers-Briggs Type Indicator (Myers, 1976), has been shown to interact with the mode of reading instruction. A study by Golanty-Koel (1977) found that students classified as sensors, who comprise approximately 75% of her population, were mismatched with traditional basal reader instruction. However, students classified as intuiters (the other 25%) tended to take very well to classical basal reader instruction, which was classified as intuitive by the investigator.

In addition to having preferences for environment, processing mode, and style of learning rooted in personality, students also have input preferences rooted in their sensory apparatus. Barbe, Swassing, and

Milone (1979) have documented that some students input information better by looking than by seeing. This modality preference, when matched by instructional mode, produces superior learning as compared to that produced by a less preferred mode (Barbe, Swassing, and Milone, 1979).

Reading comprehension is strongly affected by the prior knowledge of the reader (Pearson, Hansen, and Gordon, 1979). It would be of great value to teachers to have some knowledge of how their students stand in this respect--before, during, and after instruction.

Gambrell, Koskinen, and Cole (1981) found that students who were better readers tended to report more mental imagery during reading. Although the relationship between this factor and comprehension needs to be explored further, teachers who knew how much mental imagery their students reported would be better able to teach them in ways that capitalized on strengths in this area and minimized the effects of gaps.

It seems that schema, or abstract frameworks students use to make sense of their experience, may be the bedrock of cognition. Much research in recent years (Pichert and Anderson, 1976; Anderson, Reynolds, Schallert, and Goetz, 1977; Thorndike and Yekovich, 1980; and so on) has indicated the potency of these mental structures in mediating and enhancing reading comprehension. Assessment of how individual students make use of these schemata in reading could give teachers a heightened awareness of cognitive structures that might need to be developed, tuned, or refined as part of reading instruction.

What May Be Taught to the Learner

Myer (1975, 1977) has developed a system for analyzing prose text into its constituent parts in such a way that the propositional/semantic

hierarchy is exposed. She has found it possible to predict with accuracy which propositions in a piece of prose text will be remembered best.

Teachers, provided with information as to what information their students recall and as to what the structure of their texts happen to be, would be able to teach students how to locate and comprehend the key propositions.

Thorndike (1977) has developed a rhetorical analytic technique into a method for mapping a "story grammar." Teachers who could assess their students' ability to comprehend, to construct, or to complete a "story grammar" would be in a position to teach them how to achieve "macrocomprehension" of what they read.

Myers and Paris (1978) have demonstrated the importance of what students know about the reading process and the strategies they use to attain comprehension of text. They call this "metacognition" about reading. Again, if teachers knew what specific concepts, hunches, and myths comprised their students' metacognition about reading, they could perhaps teach concepts that would make students' comprehension easier to attain.

If teachers knew how their students attempted to use their prior knowledge to comprehend text, they would perhaps be able to fill in gaps or teach students how to access and use this information to better comprehend (Pearson, Hansen, and Gordon, 1979).

Anderson and Kulhavy (1972) found that instructions to use mental imagery while reading enhanced comprehension and recall--for students who used it. It seems that half of the group told to use it did not, and half of the group not told so did use it. (One would expect this if the groups were randomly assigned and students habitually used the strategy or not--

but that one instruction was not enough to change behavior. This seems to be the case.) However, it seems that increased imagery is associated with better comprehension (Gambrell, Koskinen, and Cole, 1981) and that instruction can affect it (Pressley, 1977). If teachers knew which of their students could use imagery, they could instruct them to continue to do so. Conversely, if they knew which of their students were not users of imagery, they could attempt to instruct them in its use.

The research on learning/study skills is spotty, particularly with respect to notetaking, underlining, text-study strategies, and the like. However, enough has been explored to know that strategies such as these are facilitative under certain conditions (Anderson, 1980) and that mnemonic-type strategies are nearly always potent facilitators of recall. As the research designs and evaluations of the former strategies are improved, it may be expected that the effectiveness of all such strategies will be unequivocally validated; this is an area where research has been notoriously weak--perhaps because, more than other reading research, it needed to be conducted in naturalistic settings. A teacher who knows student status in this area is enabled to teach these skills systematically and effectively.

Each factor discussed above has been shown by research either to be relevant to instructional effectiveness or to be manipulable in a way that enhances learning. Nearly all factors listed are more potentially useful to the classroom teacher than those listed as subtests on group-normed standardized or minimum competency/functional-type tests. There are several reasons for this:

1. All factors listed except one have been expressly studied under the umbrella of the framework listed as psycholinguistic/cognitive. Those studied have been shown either to facilitate reading comprehension/learning or to be teachable tasks, or both. The sole exception is that of learning skills, where the research is spotty in its consensus (Anderson, 1980). Here, research has both supported and failed to support the traditional learning/study skills (listening, taking notes, and strategies for using textbooks) and been more consistently favorable to mnemonic strategies of various sorts (Higbee, 1977; Paivio, 1971). Traditionally, the "study skills" have been difficult to study, since their use was difficult, if not impossible, to control experimentally and the outcomes of their use were very difficult to operationalize. It is possible that, when studied using outcome tasks similar to those used to assess the other factors, these "skills" will prove equally useful. At any rate, all factors mentioned may be subsumed under the psycholinguistic/cognitive umbrella--while the normal tasks tested have far less reality in that view of learning and instruction.
2. Factors listed above give teachers information that they can use directly to improve instruction and to enhance student learning.
3. Instruction that deals with one or more of these factors may very well improve the entire reading/learning process in

students. They are interrelated and seem to interact with the cognitive core of routines and strategies used by learners in nearly all learning. Conversely, the tasks required by the present tests are not interrelated in this fashion. Nor has anything less than massive instruction in standard test tasks been conclusively shown to affect student reading performance other than global phonic and decoding tasks--measured by the tests themselves.

4. All psycholinguistic/cognitive factors listed here operate in a naturalistic learning environment (which may be why "study skills" research has been so inconsistent). It therefore seems logical that they are best assessed in the same type of environment.

For these reasons, it is suggested that work begin to incorporate these factors into widespread use as components of assessment. Time, effort, and research will be needed to bring this about. Public school educators, legislators, researchers, test developers and publishers, teacher educators, the general public, teachers, and professional organizations will all have a role to play in such a change. Not only will logistics of assessment need to be worked out, but assumptions, procedures, bylaws, and mandates, as well as attitudes and public acceptance, will require changing. A task of this magnitude will require a truly grassroots effort--but the payoff will be enormous. For the first time in a long while, education will be reconnected to its own roots. Given the research base cited above, it should be possible to synthesize the research and to

design a really valuable assessment of reading and what is involved in its learning. It is high time we began to make the effort.

It seems reasonable to suggest that test developers, researchers, and consumers of tests begin to integrate these factors into group assessments. This would give educators information more closely related to instruction and learning. It would give all consumers benchmarks that reflected student status or progress in terms that were educationally and practically meaningful. It would give researchers, educators, trainers, and human resource personnel in business and industry a common vocabulary and set of concepts. Use of these factors as assessment tasks would give educators of all types a way to assess more realistically and to plan ways to accelerate and to individualize the teaching/learning process in ways currently not possible. Use of these factors in the assessment process would help in moving educational practice to a truly "state of the art" condition, and would mark the end of an era of stasis both in assessment and in instructional practice. It would accelerate the rate at which the status of educational practice, materials of instruction, and mode of change would begin to approximate those of a theory-based profession, founded on research as its bedrock of credibility.

C. Possible Assessment Packages

There are several alternative assessment packages that might be implemented. It would make sense to implement packages that were a 90:10 mix of old and new subtests first, and then gradually decrease the ratio of old to new. For instance, successive generations of assessment might look like this:

	<u>Percentage of Old Subtests</u>	<u>Percentage of New Subtests</u>
I	90	10
II	75	25
III	50	50
IV	25	75
V	10	90

Phased introduction of new subtests could be done on a planned basis, as research and field testing produced new modes of assessing the factors they would test. Since some of the suggested factors will be difficult to assess as paper-pencil tests in a brief span of time, it might be necessary to look at them over an expanded time during the course of ongoing instruction. This would be more consistent with the notion of good instruction requiring on-line assessment. Other features of these assessment packages might include:

- Standardized diagnostic lessons;
- Cross-grade/interdisciplinary team assessment of large groups of students;
- Diagnostic evaluation of student written work; and/or
- Assessment of teachers' stylistic and cognitive preferences for comparison with those of students.

Subtest mixtures of these assessment packages might look like one or more of the following:

- I. Hybrid of Old and New
 - A. Phonics
 - B. Vocabulary
 - C. Reading Passages Followed by Questions
 - D. Student Learning Style Preference
 - E. Student Report of Mental Imagery
 - F. Functional Reading
 - G. Rate
- II. Learner Status Assessment
 - A. Student Learning Style Preference
 - B. Cognitive Style Analysis
 - C. Personality Type Inventory
 - D. Modality Strength Assessment
 - E. Prior Knowledge Profile--Content Specific
 - F. Schema Utilization Diagnosis
- III. Learner Strategy Assessment
 - A. Recall of Information Related to Prose Structure Analysis
 - B. Student Use of Story Grammar Comprehension Strategy
 - C. Students' Metacognitive Strategy Employment
 - D. Effect of Instructional Mode on Student Reading Comprehension
 - E. Student Use of Prior Knowledge
 - F. Use of Mental Imagery for Comprehension/Recall
 - G. Student Use of Study Skills: Listening, Notetaking, Memory, Textbooking, Time Management
- IV. Hybrid of I, II, and III.

All four alternatives could be put on the computer and used for grouping, instructional planning, and counseling with students to help them to capitalize on their strengths.

D. "Buck Rogers" Factors

There are other factors that could ultimately be incorporated into assessment. Research has shown them to be related to reading comprehension, but has not progressed to the point where they can be recommended for inclusion as are the ones above. However, it is recommended that support be given to research that might put them into the "recommended" category as soon as possible:

- Pattern recognition in large arrays of information
- Rhetorical analysis strategies
- Text diagramming
- Summarizing processed data
- Recall style (visual, auditory, kinesthetic)
- Use of information format to cue processing
- Instantiation speed and flexibility
- Paraphrasing
- Achievement instruction
- Predicting

The utility of these factors in enhancing comprehension is currently being proven in classrooms. Their formalization in assessment would lend added weight to efforts to get teachers to put them into widespread use.

III. How to Get from Here to There: A Blueprint for Change

As noted above, tests have not changed much in recent years. This stasis has caused instruction, materials development and marketing, curriculum decisions, and even research, to suffer. In fact, the glacial rate of change in the way educators look at education has caused the public, the media, and legislators to fixate on what may be argued to be outmoded indicators of effectiveness. It is time to get things moving again.

How? The problem is like a cancer--it has spread and affects nearly every aspect of education. There is even a sound perception that testing is a good thing. Even though that is true, the perception itself leads to a satisfaction that contributes to passivity rather than change. No one seems to own the problem--yet it touches all of us. How does the ball get rolling?

The answer is not a simple one. Each person affected--or at least a vocal segment--must take responsibility for doing certain things. This section will attempt to identify key persons and groups in the process of positive change. It will seek to specify the tasks each person/group should undertake in order to make this change occur in a positive direction. The tasks are not easy, but they can be done.

Researchers in reading/learning and testing should design and conduct studies whose aim is to translate research in the factors recommended for inclusion in the various assessment packages into formats that will allow their use in this fashion. They should make this agenda their own, and inculcate graduate students with an assessment philosophy consistent with

this end. They should promote this viewpoint vigorously with their various audiences, professional associations, and contacts in the publishing industry.

Teacher pre- and in-service trainers/educators should attempt to persuade their clients that useless assessment should be restricted, disregarded, and ultimately replaced by theory-based assessment useful in instruction. These clients should be urged to make this an integral part of their professional agendas, to demand movement in this direction from test publishers, materials publishers, and in contract negotiations. They should also be trained to urge legislators to ban the use of statewide assessment packages that are not "state of the art" with respect to theory-based instruction. Teachers must be better trained to be consumers of research.

Curriculum developers and decision makers should incorporate theory-based assessment and instructional techniques into their curriculum designs. They should articulate this viewpoint to superintendents, boards of education, teachers, and publishers whose materials they use. They should also pursue this goal through positions, legislative initiatives, and presentations and papers sponsored by their professional organizations. Since these educators are usually key curricular leaders in school systems, their involvement in this issue should be viewed as critical. Local chapters of the International Reading Association should make every attempt to involve them in this issue.

Principals and reading teachers in each school are an indispensable part of getting teachers to accept the idea of a theory-based assessment.

They must tell classroom teachers of their own support for the concept and help them to implement it in classrooms. They would also emphasize this issue with parents and show how results translate into instruction and learning payoff for students.

Developers and publishers of tests should move as rapidly as possible to begin incorporating the recommended factors into the assessment packages they market. They should use and support the outcomes of current research and strive to educate their consumers as to the value of this approach. When possible, these new packages should be made compatible with the new information-handling technology. Profits in this field will go to the best and soundest--not to the best marketed.

Federal and state education agencies should announce that they favor and support assessment of this type. They should move to adapt their mandated assessments to this posture. They should devote resources to fostering this approach in local agencies, as well as directing their information officers to promote this viewpoint. Legislative efforts should establish the agencies' leadership in this regard.

Boards of education should support this approach through formal resolutions. They should direct their professional staff to move their school systems into this posture. Local chapters of the International Reading Association should lobby vigorously for this action.

Publishers of educational materials should modify their planning and marketing operations to make efforts consistent with theory-based instruction and assessment. Primarily, teachers' guides should contain information, hints, and tools to help instructors implement "state of the

art" techniques. Research should be made more accessible to teachers in forms that allow them to evaluate it fairly. Consultants should be retrained where necessary to allow them to deal knowledgeably with current research. Current published materials are the best in the world because of free-market competition. It is time that marketing competition dealt more specifically in facts verifiable by critiqueable research.

The International Reading Association should adopt the call for theory-based assessment and instruction as a policy. It should lobby its fellow organizations (particularly NEA, AFT, AERA, CRA, NRC, NCTE) to co-adopt this policy. It should also lobby the Department of Education, state education agencies, boards of education, and teacher educators to adopt and implement this policy. It should address this issue to the National Commission on Excellence in Education and to the general public with the greatest vigor. It should support legislation aimed at moving public education into a posture of acceptance and implementation. In all ways possible (e.g., through its annual conference), it should foster this policy as a first step in the re-professionalization of education. State and local chapters of IRA should be active participants in this action.

Legislators should enact legislation requiring state education agencies and state-supported programs to implement theory-based, instructionally useful assessment as a condition of continued funding. They should be lobbied by IRA chapters so that they understand this issue as fully as possible.

Each one of us should begin now to convince those we meet of the necessity for moving in this direction. We should each exert our own

energy to get education moving in this direction. If each educator does a small amount of persuading and talking, the field will begin an inexorable movement in the right direction. We do not know our own capacity for changing things until we try it out. For the sake of education and our society, we must begin today.

Summary

Beginning with a consideration of the need to update and revise educational assessment in reading, this discussion analyzed the factors assessed by current group-normed and functional-type minimum competency tests, examined factors recommended for inclusion in a new type of assessment in terms of the recent research supporting them, and ended with a blueprint for action by various educator and professional groups that will enable the field to make the recommended changes.

It is hoped that this consideration will spark debate and discussion and will play a part in creating the proposed changes in the way we assess reading. The health and integrity of our profession is at stake; we can only gain by trying to make these changes.

Let's get started. Today.

TESTS ANALYZED

1. Metropolitan Achievement Test (Metro '78), Primer Level (K.5 - 1.4), Psychological Corporation, New York, 1978.
2. Metro '78, Primary 1 (1.5 - 2.4).
3. Metro '78, Primary 2 (2.5 - 3.4).
4. Metro '78, Elementary (3.5 - 4.9).
5. Metro '78, Intermediate (5.0 - 6.9).
6. Iowa Test of Basic Skills (ITBS), (3 - 9), Houghton-Mifflin Company, Boston, 1978.
7. ITBS, (1 - 2).
8. SRA Criterion-Referenced Measurement Program (SRA), (3 - 9), Science Research Associates, Inc., Chicago, 1976.
9. Stanford Diagnostic Reading Test (SDRT), Red Level (1² - 3), Harcourt Brace Jovanovich, Inc., 1976.
10. SDRT, Green Level (3 - 5).
11. SDRT, Brown Level (5 - 8).
12. Gates-MacGinitie Reading Test (GMG), Levels A and B (1.5 - 1.9; 2), Houghton-Mifflin Company, Boston, 1978.
13. California Achievement Test (CAT), Level 10 (K.0 - K.9), McGraw Hill, Inc., Monterey, 1978.
14. CAT, Level 11 (K.6 - 1.9).
15. CAT, Level 12 (1.6 - 2.9).
16. CAT, Level 13 (2.6 - 3.9).
17. CAT, Level 14 (3.6 - 4.9), Level 15 (4.6 - 5.9), Level 16 (5.6 - 5.9), Level 17 (6.6 - 7.9).

18. Stanford Achievement Test (SAT), Primary Level I (1.5 - 2.5),
Harcourt Brace Jovanovich, Inc., New York, 1973.
19. SAT, Primary Level II (2.5 - 3.5).
20. SAT, Primary Level III (3.5 - 4.5).
21. SAT, Intermediate Battery: Level I (4.5 - 5.5).
22. SAT, Intermediate Battery: Level II (5.5 - end of 6).
23. Metropolitan Achievement Test (MAT), Primer (K.7 - 1.4), Harcourt
Brace Jovanovich, Inc., New York, 1971.
24. MAT, Primary I (1.5 - 2.4).
25. MAT, Primary II (2.5 - 3.4).
26. MAT, Elementary (3.5 - 4.9).

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